

Statistics

Name _____ Date _____ Period _____

For each situation described, identify a) the population, b) the sample population, and c) the parameter of interest.

1. An AP Government class wants to know the percentage of eligible voters in the state of Utah who voted in the most recent election. There are 1,938,249 people in Utah who are 18 and older. The class randomly looks at 15 state house districts and discovers that 50.5% of the eligible voters actually voted.

a) population:

b) sample population:

c) parameter of interest:

2. A local radio station has added an additional radio personality and is trying to determine what type of music to play during this person's air time. This time slot is geared towards teenage listeners. The station has decided to survey 300 randomly selected students from the ages of 13 to 19.

a) population:

b) sample population:

c) parameter of interest:

3. A health class wants to know the average amount of time Utahns over the age of 12 spend exercising each week. A sample of 1,200 randomly selected people, over the age of 12, across the state was surveyed.

a) population:

b) sample population:

c) parameter of interest:

For each method described below, determine what type of sampling method it is (simple random sample, systematic sample, stratified sample, or convenience sample) **and** justify whether or not the method is biased.

4. In order to determine the average composite score on the most recent ACT exam, students were divided into groups based on whether they were enrolled in remedial, regular, or honors language arts. Individual scores were randomly selected from each group.

a) sampling method:

b) Is this biased? Explain:

5. Every third patron exiting the school musical was surveyed regarding their support for more funding of the arts.

a) sampling method:

b) Is this biased? Explain:

6. A random number generator was used to assign students to demonstrate work in front of the class.

a) sampling method:

b) Is this biased? Explain:

Which type of study method is described in each situation (survey, observation, experiment)? Should the sample statistics be used to make a general conclusion about the population?

7. The owner of a bakery collects data about the types of cupcakes that are purchased so she can make cupcakes accordingly. She records the type of cupcake purchased by every other person each day for three weeks.

a) study method:

b) Should the sample statistics be used to make a general conclusion about the population? Explain

8. A local grocery store selects 350 customers from a list of 1500 new customers in the past year to mail a questionnaire. There are 245 customers who return the questionnaire.

a) study method:

b) Should the sample statistics be used to make a general conclusion about the population? Explain

9. A teacher wants to know if playing classical music while a class works on a test will improve their scores on the test. She uses two class periods of equal size (35 in each class) and equal baseline test data. For an entire semester, she plays classical music while one class is testing and plays no music while the other class is testing.

a) study method:

b) Should the sample statistics be used to make a general conclusion about the population? Explain

10. Every day for two weeks, a student records the number of her classmates who are late to class.

a) study method:

b) Should the sample statistics be used to make to make a general conclusion about the population? Explain

Normal Distribution

11. The mathematics portion of the SAT has a mean score of 500 and a standard deviation of 100.

a. What is the interval that contains 99.7% of the scores?

b. What is the interval that contains 95% of the scores?

c. What is the interval that contains 68% of the scores?

12. The average height of an NBA basketball player is 79 inches with a standard deviation of 3.89 inches.

a. What is the interval that contains 99.7% of the heights?

b. What is the interval that contains 95% of the heights?

c. What is the interval that contains 68% of the heights?

Margin of Error

13. A recent school poll showed that 55%, with a margin of error $\pm 3\%$, of students prefer school lunch. According to these statistics what is

a) the greatest percent of students who prefer school lunch?

b) the smallest percent of students who prefer school lunch?

14. If the average life of a certain lithium battery is 23 hours, with a margin of error of ± 2.5 hours, what would be the most number of hours the battery will operate according to these statistics?

What is the shortest number of hours the battery will operate?

